BG9A02

010

CC/00

DEPARTMENT OF EDUCATION AND SCIENCE
ELIZABETH HOUSE YORK ROAD LONDON SE1 7PH
TELEPHONE 01-934 9000

WBM.

FROM THE SECRETARY OF STATE

The Rt Hon Viscount Whitelaw
Lord President of the Council
68 Whitehall
LONDON SW1

31 July 1985

Dear Willie,

HOUSE OF LORDS SELECT COMMITTEE
REPORT ON EDUCATION AND TRAINING FOR NEW TECHNOLOGIES

1. This Report, produced by a Sub-Committee of the House of Lords Select Committee on Science and Technology, was published last January. I now attach a draft of the Government's response which has been developed through co-operation between officials from the Department affected by the recommendations. The present text reflects some editorial reworking from the draft circulated among officials but is, in substance, unchanged. The response will need to be issued in the form of a White Paper and I am now seeking clearance for this through the present correspondence.

2. We have taken the opportunity, in the introduction to the response, to draw attention to the scale and coherence of Government policies to meet the educational and training challenge posed by the new technologies (while seeking to avoid the charge of complacency). The main body of the Report thereafter deals with the Committee's individual recommendations. On quite a number of these we are able, as you will note, to be suitably positive. But on some of the Committee's central recommendations, notably the proposal to establish an Education and Training Board (recommendations 9 and 10) and on the proposed National Training Levy (recommendation 40) the draft response is negative, reflecting both the outcome of the inter-Departmental discussions between officials and wider reaction to the proposals from, among others, the CBI.

3. Recommendations 17 and 19, concerning possible extensions of tax concessions to stimulate increased industrial contributions to educational institutions, give rise to particular difficulty. The draft currently rejects the recommendation on the advice of Inland Revnue officials. My own view is, however, that a wholly negative response couched in those terms will be seen as resting uncomfortably alongside our current encouragement to industry to do more to support the education system - encouragement which seems, at least in prospect to be on the brink of eliciting

/cont'd...

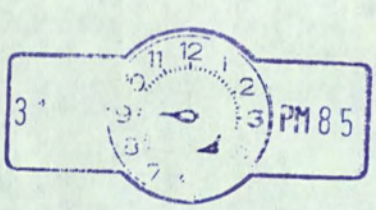
a substantial response through such channels as the new Information Technology Skills Agency. This is, moreover, an area where a number of influential voices within industry have themselves been pressing for Government to adopt a more positive posture. For these reasons, while I acknowledge that there may be problems for the Revenue, I believe that the time would now be opportune to establish a Working Group of officials and representatives of industry to examine the present scale of relevant tax concessions to industry and commerce, and the scope of their extension, so that we may judge whether further tax incentives would act to stimulate substantial increased support - financially or in kind - for the education system. A response along these lines would also, for obvious reasons, improve the presentational aspect of our response to the Report as a whole which may otherwise be seen as generally rather negative.

4. I would be grateful for the Chancellor's comments - and for those of colleagues' generally - on this issue in the light of which this section of the response could be recast as appropriate. I would also be grateful for consent to the issue of the response as a whole and would ask if replies could reach me by 23 August - permitting publication in mid to late September. (There may need to be some minor updating in the light of relevant developments since the text was prepared). This is after the time originally envisaged but I have recently written to Lord Gregson, the Chairman of the Sub-Committee, alerting him to the fact that our response would be a little longer delayed.

5. Copies of this letter go to the Prime Minister, Members of H Committee, the Chancellor of the Exchequer, the Secretary of State for Trade and Industry, Sir Robert Armstrong and Sir Robin Nicholson.

Yours ever,

Kenneth


PM 85

CABINET OFFICE

70 Whitehall London SW1A 2AS Telephone 01-233 3299

From the Minister without Portfolio

The Rt Hon Lord Young of Graffham

The Rt. Hon. Sir Keith Joseph M.P.,
Secretary of State,
Department of Education & Science,
Elizabeth House,
York Road,
London, S.E.1.

27th August, 1985

NBPM

Dear Keith,

I have seen your letter of 31st July to Willie Whitelaw about the House of Lords Select Committee Report on Education and Training for New Technologies. I have also seen Michael Lucas's letter of 19th August.

It seems to me that your idea of a joint working group to look at tax incentives for industrial support of the education system has considerable merit and I hope colleagues will be able to support it. I responded for the Government to the debate in the Lords on 25th March initiated by Lord Gregson. There was a good deal of concern about the problems the report identifies and an equal degree of interest in the Government's response. From the presentational viewpoint alone, I am certain that we should respond as positively as possible to recommendations 17 and 19. It seems to me, too, worth running the possible risk of arousing expectations about further tax concessions for the sake of examining the likely effects of extensions and taking a cool look at which of the existing concessions are most cost-effective and worth preserving.

I would be happy for my officials - who will be giving yours detailed drafting points - to be involved in such a Working Group.

I am copying this letter to the Prime Minister, Members of H Committee, the Chancellor of the Exchequer, the Secretary of State for Trade & Industry, Sir Robert Armstrong and Sir Robin Nicholson.

Yours,

Norman

Education: Expenditure Pt 5.

MW

010

CF. Could I see the file on this please?
PL 2 @ Flag.

From the Minister of State

Department of the Environment
2 Marsham Street
London SW1 3EB

Telephone 01-212 3434

CF

This file does not seem to contain any of the relevant corres. Could try to elsewhere? If not, we shall need to request SoS's letter of 31 July.

J/PSO/16309/85

27 August 1985

Dear Willie

copy attached - PPs on education: expenditure Pt 5

I have seen a copy of Keith Joseph's letter to you of 31 July covering the draft Government response to the report of a Sub-Committee of the House of Lords Select Committee on Science and Technology published last January, and am writing to you in Patrick Jenkin's absence on holiday.

I wondered whether a mention of the recent report from the Audit Commission "Obtaining Better Value from Further Education" would be helpful in response to Recommendations 16 and 21 which call for the provision of additional resources. Apart from that I have no comments on the draft response and I am therefore content for it to be issued as a White Paper as proposed.

I am copying this to the Prime Minister, Members of H Committee, the Chancellor of the Exchequer, The Secretary of State for Trade and Industry, Sir Robert Armstrong and Sir Robin Nicholson.

Rodney

THE LORD ELTON

The Rt Hon Viscount Whitelaw

cc NO

DEPARTMENT OF TRADE AND INDUSTRY
1-19 VICTORIA STREET
LONDON SW1H 0ET
Telephone (Direct dialling) 01-215 4041
GTN 215
(Switchboard) 215 7877

From the Parliamentary Under Secretary of State for Trade and Industry

DW450

19 August 1985

The Rt Hon Sir Keith Joseph Bt MP
Secretary of State for Education
and Science
Elizabeth House
York Road
LONDON
SE1 7PH

PS/Mr Lamont
PS/Mr Butcher
PS/Sir Brian Hayes
Mr Roith
Mr Hardbattle
Mr Whittingdale
Mr Hellings (on file)

Dear Sir Keith

Thank you for copying to Norman Tebbit your letter of 31 July to Willie Whitelaw about the House of Lords Select Committee Report on Education and Training for New Technologies. I am replying in his absence on leave.

2 My officials will contact yours concerning any detailed drafting points. However, I would like to support your suggestion that a Working Group of officials and industrial representatives should examine the present state of, and future possibilities for, tax incentives for industrial support of the education system. Incentives of this kind have been strongly supported by industry, and they merit examination in depth before we make our response to the Report.

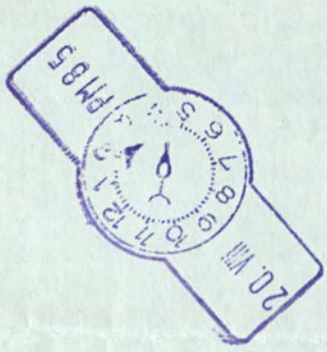
3 I am copying this letter to the Prime Minister, members of H, Nigel Lawson, and to Sir Robert Armstrong and Sir Robin Nicholson.

Yours ever

Richard

LORD LUCAS OF CHILWORTH

EDUCATION: Policy; Pt 5.



BERNARD

Sir Robin Nicholson wondered whether you could ask DES to brief on the second question, sending the briefing to Sir Robin by close of play tomorrow evening. He will then incorporate this briefing into his briefing for questions 1 and 3.

He also wondered whether the Prime Minister had given Mr Maddox a previous interview.

I have asked DES & informed RN's office.
MEA 5/7

Rose

1. How does the Prime Minister fulfil her rome, as she sees it, of supervising the science as a human activity? This questions stems from the fact that Mr Maddox alleges that in her reply to the House of Lords Select Committee, which advocated the appointment of a Science Minister, the Prime Minister replied that this was not necessary because she herself was a scientist.

2. There is very considerable concern, which Mr Maddox shares, about the spending on pure research in our universities. What has the Prime Minister to say about this? Does she think the declining spend is adequate?

3. To what extent will the trouble last weekend at the European Council in Milan affect technical and scientific collaboration in Europe, and more especially the EUREKA programme.

NBPM

OR.

From the Secretary of State
With the Private Secretary's Compliments

The attached draft response was omitted from the letter from Sir Keith Joseph to Lord Whitelaw of 31 July 1985 on "House of Lords ~~Select~~ Select Committee Report on Education and Training for New Technologies"

DEPARTMENT OF EDUCATION AND SCIENCE
ELIZABETH HOUSE YORK ROAD LONDON SE1 7PH
TELEPHONE 01-934 9000

1/8/85 Clair Jones

D0613FHE25A(12)

SIXTH DRAFT
23-7-85

EDUCATION AND TRAINING FOR NEW TECHNOLOGIES: DRAFT RESPONSE

1. The Government welcomes the Committee's comprehensive and illuminating report. This response sets out the thrust of relevant Government policy and addresses the particular recommendations the Committee directs to Government, commenting on others where it seems helpful and appropriate to do so.

2. Chapter 5 of the Committee's report draws attention to the critical link between educational and training provision, on the one hand, and technological progress and economic growth on the other. Encapsulating this relationship in the "Summary of Conclusions and Recommendations", the Committee recommends:

Recommendation 1, 2 and 3

1. "Technological progress in the UK is being hampered by failure to develop its human resources. The UK's competitive edge in international trade is at stake. There is no more serious challenge than the adequate provision of people properly qualified and trained to exploit new technologies as they emerge."

2. "New technologies make great demands on the intellectual resources of the nation. Hitherto the response of the education and training system has been insufficient. Attention must be given to longer-term needs, to redress the lack of correlation between educational provision and industrial requirements."

3. "The development and application of new technologies depend on leading edge technologists. The emphasis of UK policy should be on the encouragement of scientists and technologists of high quality, on underpinning such excellence by raising the technological literacy of the nation; and on continuous learning and updating."

3. The Government fully endorses the main features of this analysis. Similar conclusions underpin the Government's recent Green Paper: "The Development of Higher Education in the 1990s" (Cmnd 9524, May 1985, which will be referred to in this document as the Higher Education Green Paper). This stated, in particular:

"The Government is particularly concerned by the evidence that the societies of our competitors are producing, and plan in the future to produce, more qualified scientists, engineers, technologists and technicians than the United Kingdom. A thriving economy needs these skills both to develop the talents of entrepreneurs and to support their achievements: if the present trends continue, the result seems likely to be a further fall in our relative standard of living and our ability to sustain our cultural heritage" (paragraph 1.3).

The Government has, furthermore, acted positively and consistently on the basis of this analysis. Over the past few years it has developed relevant initiatives at all levels of the education system aimed at strengthening the focus on science and technology generally and the new technologies in particular.

4. In higher education, which uniquely provides the additional "leading edge" technologists the nation urgently requires:

- it established in December 1982 the Information Technology in Higher Education Initiative (IT in HE), providing, by October 1985, 5,000 additional places, in universities, polytechnics and other colleges, in electronic engineering and computer science, at higher diploma as well as degree level;

- through the IT in HE and "New Blood" schemes it has provided resources for 950 additional university posts, to assist the recruitment of able young researchers and teachers into departments, mainly in the sciences, where the scope for appointments would otherwise have been extremely limited;

- it has successfully encouraged both the universities and the polytechnics (through advice, respectively, to the University Grants Committee (UGC) and the National Advisory Body for Public Sector Higher Education (NAB)) to increase the proportion of science and technology students in their planned intakes for 1984-85 and 1985-86;

- in Scotland, it has funded the creation of additional engineering and technology places in the Central Institutions with the objective of increasing the Institutions' graduate output in these subjects by around one-third by 1989-90;

- most recently, in March this year, it launched the Engineering and Technology Programme, which will eventually provide an estimated 4,000 extra places in first degree and masters' courses - largely in subject areas directly relevant to the new technologies.

5. In the area of non-advanced further education, upon which the output of skilled technician support depends, the Government has:

- through the measures set out in the White Paper 'Training for Jobs' (Cmnd 9135, January 1984) set in train arrangements under which the Manpower Services Commission will assist LEAs in the planning of courses in areas relevant to the new technologies;

- announced in the recent White Paper "Education and Training for Young People" (Cmnd 9482, April 1985) expansion of the Youth Training Scheme and a review of vocational qualifications in England and Wales.

- supported with a £9m grant under the new Education Support Grant arrangements (introduced by the 1984 Education (Grants and Awards) Act), local authority expenditure of £13m in 1985-86 to enable colleges to provide vocational students with an education which takes proper account of the industrial and commercial applications of information technology in working practice.

6. Right across further and higher education, the Government is taking steps to promote awareness of the need for continuous professional updating and to improve the opportunities available for individuals and their employers. The Adult Training Awareness Campaign, led by the MSC, involves all the relevant Government Departments. The DES - organised PICKUP programme, discussed more fully in paragraphs 106 and 112 below, is increasing the readiness and capability of educational institutions to provide vocational education for

adults and is making more accessible information needed by both providers and clients.

7. The Government has, therefore, already done much to increase provision in science and technology (and particularly in those areas relevant to the new technologies) in higher and further education. In doing so, it has given full weight to advice on actual and potential areas of skill shortage, offered by, among others, the IT Skills Shortages Committee (under the Chairmanship of Mr John Butcher MP) and the Engineering Council. More recently it has had the advice of the Information Technology Skills Agency, recently established under the aegis of the CBI. In large measure such advice has also been underwritten by the Select Committee's own conclusions. At the same time the Government, like the Committee, recognises how crucial is the availability of school leavers with academic qualifications enabling them to undertake further and higher education courses in disciplines relevant to new technologies. The Government correspondingly endorses the fourth conclusion of the Committee:

Recommendation 4

4. "Initial education should provide boys and girls equally with a broad grounding of relevant knowledge and an understanding of the scientific principles underlying new technologies, coupled with a receptive attitude towards technological progress and its demands."

8. The Government's policies for the schools in England and Wales, which are set out in the White Paper "Better Schools" (Cmnd 9469, March 1985), are designed to ensure that all pupils follow a broad and balanced curriculum throughout the years of compulsory education, and to raise standards. It is the Government's objective that all pupils should be properly introduced to science in the primary school, and that all pupils should continue to study a broad science programme until the age of 16. The Government has also stressed the importance and value of practical and technological work for all pupils. Through the pilot projects of the Technical and Vocational Education Initiative (TVEI), broadly based and balanced courses of general, technical and vocational education are being offered to 14-18 year old girls and boys across the ability range. Awareness of new technology is being encouraged through the

Microelectronics Education Programmes and other schemes aimed at building on pupils' natural interest in current technological developments.

9. Recognising the impact of schools examinations, the Government has launched a programme of related changes in the examinations system in England and Wales. Important elements within this are:

- an emphasis within the national criteria for the GCSE on practical skills, reasoning and the application of knowledge in all subjects;

- the publication of national criteria for craft, design and technology courses in the new GCSE examinations;

- the introduction of AS levels which will, among other things, make it easier for those taking A levels in arts subjects to continue the systematic study of mathematics or science or technology.

10. In Scotland, the Government has made it plain that it expects all pupils to study English, mathematics and a science throughout the years of compulsory education. The new Scottish Standard Grade courses for mathematics and physics emphasise practical investigation and problem solving and the new National Certificate modules are intended eventually to introduce all post - Standard-Grade pupils to a number of vocational subjects.

11. By these and other actions in fields relevant to the new technologies, the Government is showing its commitment to improve the supply of suitably qualified manpower and to secure a cultural shift towards an emphasis on science and technology in line with the Committee's advice. But it agrees that there is more to be done both by Government itself and, perhaps more important, by industry and employers. Career choices by young people within the fields of new technologies will depend to a substantial extent on how they see the attractiveness of the opportunities available to them. Intelligent numerate young people and their parents can see many attractive opportunities, not least in the City and accounting. So industry must make a continuing and sustained effort to offer requisite remuneration and career prospects to attract able young people into technological careers, and a commitment to the continued

education and training necessary to keep pace with rapid technological change. Industry needs also to give continuing support for education institutions at all levels, including material support in line with practice in other leading economies, to sustain a joint approach to the education, training and research upon which a thriving economy will increasingly depend.

12. In the paragraphs that follow, the Government offers the following specific responses to detailed recommendations in the Committee's report:

Recommendations 5 and 7

5. "Specialisation should be deferred as late as possible, to the end of formal education and to the early years of employment."

7. "For technologists first degrees are too short. The necessary specialisation should take place mainly at postgraduate and post-experience levels. HEIs should move towards this pattern in appropriate subjects."

13. "Better Schools" (Cmnd 9469) makes clear the Government's view that all pupils should continue to study a broad, balanced and relevant curriculum, differentiated to take account of different levels of ability, throughout the period of compulsory education. This means that they should not be able to drop at the age of 14 or 15, elements of the curriculum which form an essential foundation for subsequent learning, training or work. Maintaining a broad curriculum and minimising specialisation has always been a feature of Scottish education. This tradition is being maintained with the implementation of the reforms stemming from the Munn and Dunning Reports. The Government's plans to introduce AS level courses in England and Wales will contribute towards the broadening of the post-16 curriculum as do the National Certificates in Scotland; but some degree of concentration in particular subjects at this stage is inevitable and, in the Government's view, desirable.

14. In higher education, a growing number of students are studying broader combinations of subjects and many institutions have introduced relevant management and technological skills into a range of appropriate courses. The Government agrees that, provided that high standards of teaching and study are maintained within such programmes, broader degree courses in certain disciplines have an important part to play in helping to ensure that graduates have developed the kind of abilities which employers need. This view is reflected in paragraph 6.3 of the Higher Education Green Paper.

15. The Government agrees that, in general, specialisation and, in particular, vocationally orientated training should take place at postgraduate or post-experience level. In large measure this is the case at present, although the Government supports the case for a varying level of vocational content in some

first degree subjects. However, consistent with the view that such specialisation should take place predominantly at postgraduate level, the Government does not believe that the length of first degrees for technologists should generally be extended, though it supports the case for a limited range of courses to be lengthened to facilitate the inclusion of broader based material where to do so will be likely to enhance the potential of students subsequently to enter the employment market.

Recommendation 6

6. "Industry should accept more responsibility for the education and training of its recruits."

16. This recommendation is dealt with at paragraphs 87-89 below, alongside related recommendations.

Recommendations 8, 9 and 10

8. "Educational provision should be more closely related to employment needs. Educational institutions should be given more guidance on the skills likely to be required by industry."

9. "A national body should be vested with the functions of analysing and forecasting the UK's needs for skilled people over the short and long term and of ensuring that those needs are met."

10. "The committee therefore propose the establishment of an Education and Training Board:

i. it should be a central Board, drawn from industry, the academic world, and government. The DES, DTI and MSC should nominate members to the Board either jointly or separately.

ii. the creation of an entirely new body is undesirable. The Board should be part of SERC with the independent power to report to Parliament.

iii. it should commission research on manpower needs on a continuing basis and have power to call for reports from Government Departments.

iv. it should be responsible for funding postgraduate taught courses within the dual support system.

v. it should advise on priorities in undergraduate courses, conversion and post-experience courses, and training and retraining for technicians and craftsmen."

17. In proposing the creation of a national body to analyse skilled manpower needs and to oversee appropriate action to meet them, the Committee has advanced a number of important arguments with which the Government has much sympathy. Specifically it has argued that:

i. the education service should be more responsive to the needs of the economy and that, for example, changes in the balance of student provision within higher education should be less dependent on demand from students;

ii. while it must be recognised that industry cannot forecast its highly qualified manpower requirements in terms of numbers or types of skills required with any substantial precision, account should be taken of available evidence on relevant trends both in the short and longer term, and steps should be taken to improve both the supply of information and its processing;

iii. there is a case for better co-ordination in the provision of postgraduate taught courses - the importance of which is likely to increase in line with experience in competitor economies.

18. A central thrust of the Higher Education Green Paper is a recognition of the need for the higher education system to become more responsive to the needs of the economy and, in particular, to requirements within the economy for highly skilled technological manpower. This statement of policy is already being acted upon by way of a range of related initiatives. The examples at paragraph 4 above demonstrate the Government's determination to put significant additional resources into subject areas of particular relevance to industry. Information Technology is of pervasive importance but other subject areas have not been neglected. For example, in the important field of biotechnology, the Government has supported a number of initiatives. In 1982, the UGC established a programme to create additional posts in biotechnology at twelve universities. And the

SERC Biotechnology Directorate spends £3½m a year on research and postgraduate training in biotechnology. Following a request from the Secretary of State for Education and Science, the NAB recommended an allocation of £280,000 in 1985/6 to three polytechnic centres, which will enable them to increase their output of graduate biotechnologists: Capital resources were also made available to support this programme. These steps by the existing responsible bodies in the field have already led, and will increasingly lead towards significant movement on a wide front in the direction urged by the Committee. The Board proposed by the Committee, which would be advisory at all levels other than postgraduate, would need to operate alongside a number of other existing bodies in the field whose various roles it could not actually supplant. The Government does not believe that the creation of such a Board would achieve more rapid or substantial results and is not in favour of establishing it.

19. It must, moreover, be recognised that the requirements of the employment market differ widely. Estimating future manpower needs within the economy is already being undertaken by a number of agencies, for a range of purposes. The requirements of the employment market differ widely in nature and extent across the country as a whole. Hence many of the Government's initiatives are aimed at meeting skill needs at local level: a local approach can achieve a more rapid and flexible response to immediate needs than central planning which may not be easy to translate into patterns of local provision. In Great Britain as a whole the Education Departments and the MSC are sponsoring local collaborative projects (LCPs), a programme with a strong employer input which aims to help employers work with providers of education and training to define their training needs and explore possible ways to meet them.

20. In the particular matter of awards for postgraduate masters' courses, various bodies are active. The Government has noted and supports the Committee's view that better co-ordination would be likely to secure greater effectiveness. At present the SERC supports some 1,500 studentships and a further 2,500 students are supported in engineering and technology related subjects by a number of other bodies including other research councils, local education authorities, and various Government departments. The Government particularly recognises the benefits to be gained from effective co-ordination over the subject areas for which support should be given. It is therefore

currently considering with other bodies involved how best this might be secured through appropriate co-ordinating machinery. By this means, duplication of, or gaps in, provision might be avoided and examination of the appropriateness of the scale and content of current courses - as well as of the actual framework of the masters degree -might be set in train.

21. There is, nevertheless, a case to be considered for commissioning a single agency to take responsibility for forecasting manpower needs. This task would need to be undertaken against the background, accepted by the Committee as well as by the Government, that future needs are likely to be predicted with only modest accuracy and reliability. As the Committee's report confirms, manpower planning for higher education in the past has proved a hazardous process with numerous failures and few successes. In part this reflects the intrinsic uncertainty of making predictions about conditions determined by changing market and economic circumstances. Moreover, at a time of rapid technological change and restructuring, the likelihood of satisfactory evidence being available upon which detailed forward planning can reliably take place is all the more improbable. Evidence presented both to the Committee and to the Information Technology Skills Shortages Committee suggests that many companies in this field find it difficult to plan their highly skilled manpower requirements more than a year ahead with any degree of reliability and that all forward estimates are necessarily subject to considerable market uncertainty.

22. Outside central Government, responsible bodies such as the Engineering Council are engaged in advising on manpower demand matters and the remit of the newly created Information Technology Skills Agency includes a specific commitment to gauge relevant future manpower needs at all levels within the industries in its scope. While, therefore, the Government can concur in the Committee's view that approximate estimates about future needs are better than none, and that account should be taken of all useful evidence, it is not convinced that this new body created specifically for the purpose would be able to add significantly to the evidence already available. The Government, nevertheless, acknowledges that advice and information from national organisations may constitute only a part of that available to assist the education system in its future planning to meet economic needs. Other sources will include survey-based research commissioned either by Government or by

outside bodies; as well as expressions of experience and opinion from responsible bodies within the field. The Government is currently considering what improvements may be required in its existing machinery for the assimilation, evaluation and dissemination of such evidence. But, at a time when the Information Technology Skills Agency is about to commence undertaking its important and related remit, the Government believes it would be premature to establish a further national body with wider and inevitably more diffuse aims.

23. Accordingly, the Government concludes that, even for the purpose of manpower forecasting, it would be unproductive to create a new distinct agency.

FUNDING

Recommendation 11

11. "Education for new technologies is particularly dependent on a healthy research base in HEIs. The erosion of government funding for technological research should cease. University research should be strengthened, and new opportunties for research in polytechnics created."

24. The Government has protected Research Council funding: in cost (or constant price) terms (using the GDP deflator) the funding of the Research Councils has been roughly level since 1976/77.

25. In January of this year the Secretary of State for Education and Science announced that the Government had decided to increase the resources available to the DES Science Vote by £11 million (net) in 1985/86 and by £8m (net) in 1986/87 and 1987/88. This sum will help the Research Councils to increase their funding of university research grants. Part of the new money has been earmarked to fund restructuring programmes which involve early retirement and relocation costs.

26. Restructuring will release resources from lower priority areas to enable new higher priority areas to be developed.

27. The Government's policy is to encourage greater selectivity in the allocation of resources for research. This is necessary to ensure that money is not used to support lines of research that have proven unfruitful or where the quality of work has fallen off. As part of the move towards greater selectivity in the funding of research, additional provision of £4m in 1985-86 and £7m in each of the following two years has been made available to the UGC for the enhancement of equipment in a few carefully-selected centres of high-quality research. In the public sector, £2.5m has been allocated from the funds available for local authority higher education in 1985-86 for the selective support of research in science and technology. The Government has also legislated [see paragraph 47] to remove barriers to the commercial funding of applied research in local authority colleges.

Recommendation 12

12. "Selective grants should be introduced to encourage young PhDs to remain in scientific and engineering research at University. At least 50 per cent of the awards should be in areas identified as of priority by the Education and Training Board. All such awards should include a substantial element of industrial funding."

28. The suggestion that selective grants should be introduced to encourage young PhDs to remain in scientific and engineering research is being considered. Selective research grants are of course already available to post-doctoral and other scientists and engineers from the Research Councils (mainly the Science and Engineering Research Council).

29. Another way of encouraging young PhDs to remain in research is to offer permanent university posts. The Government's "New Blood" and Information Technology schemes (see paragraph 4 above) provide additional resources for this purpose.

Recommendations 13, 15, 16 and 21

13. "There should be a more selective approach to funding higher education, coupled with priority for schemes particularly at postgraduate and post-experience levels which involve funding through or by industry."

15. "UGC and NAB should be more selective in funding undergraduate courses taking into account the long term priorities of the Education and Training Board. This should be brought about through some earmarking of funds."

16. "There should be a shift in higher education places from the arts to the sciences and engineering greater than that now proposed by the Government. Because of the higher cost of science places, extra resources from the Government will be required."

21. "Current levels of funding technological education and training are insufficient, if either the Government or industry thinks that the nation's economic problems can be solved without spending money they are deluding themselves - in addition to the transfer of funds, increased investment is essential".

30. Like the Select Committee the Government believes that there should be a continuing shift in higher education towards science and technology subjects. As the Higher Education Green Paper states:

"In higher education the Government believes it right to maintain a distinct emphasis on technological and directly vocational courses at all levels, leading to a switch in output in favour of graduates and diplomates with corresponding qualifications. It will pursue this policy in the light of developments in the schools, and in consultation with the advisory bodies, and will consider what action should be taken if significant likely shortages in particular areas are identified" (2.9)

The Government has accepted that increased investment may be needed to help achieve this.

31. As the Select Committee acknowledge substantial measures have already been taken by the Government to bring about such a shift. Examples involving significant increases in resources are the £38m Information Technology in Higher Education Initiative, the £14m programme to expand output of engineers and technologists from Scottish Central Institutions and the £43m Engineering and Technology programme (described in paragraph 4 above).

32. Beyond these measures, in response to a UGC request, universities have indicated that, at their new levels of staffing and funding, they will seek to increase student intakes by some 3000 in both 1984-85 and 1985-86 mainly in scientific and vocational subjects.

33. In the public sector of higher education, the NAB, responding to guidance from the Secretary of State, planned for a significant shift of student numbers towards technological and vocational subjects in its first major planning exercise in respect of the 1984-85 academic year. This shift implied for first year intakes in 1984-85 that such subjects should account for 50% of all intakes compared with 45% in 1982-83. Such a change was considered to represent the maximum feasible from the system and has been broadly rolled forward for intakes in 1985-86. The Wales Advisory Body (WAB) has made similar additional provision for technological and vocational subjects in its planning exercise for 1985/86.

34. The projected effect of these measures (excluding the Engineering and Technology Programme) on first degree output from universities and the public sector will be to increase output of engineering and technology students from 15,300 in 1984-85 to 17,100 in 1989-90 - an increase of 12%. The Engineering and Technology Programme will add significantly to this output.

35. The Government also strongly supports the view that a selective approach to the allocation of resources is helpful in making the most effective use of the funds available.

36. UGC and NAB already employ a significant degree of selectivity in their allocation of funds to institutions. The additional posts being created in universities by the 'New Blood' and 'Information Technology' programmes (vid. paragraph 4 above) are allocated selectively on the basis of competitive

applications from universities. The Secretary of State for Education and Science, in his letter of 30 January 1985 to the Chairman of the UGC, has welcomed the UGC's proposals, published in September 1984 in their strategy advice on the future development of higher education, for greater selectivity in the funding of research through recurrent grant, which is likely to involve the exposition and discussion of university research plans. To quote from the Higher Education Green Paper:

> "Effectiveness in research requires concentration in strong centres. At present our resources are too thinly spread, especially in disciplines where effective research entails high equipment costs. An important thrust of research policy over the next few years will be towards selectivity and concentration" (paragraph 1.11).

37. NAB advises on the allocation of funds to public sector higher education institutions. In general, resources are allocated on the basis of target student numbers ie student numbers planned in each of a number of subject areas for the forthcoming academic year. The shift in first year intakes towards technological and vocational provision and away from humanities for its first major planning exercise relating to the 1984-85 academic year followed the Secretary of State's guidance to NAB that he wished to see "priority .... accorded to scientific and technological provision of value to industry, commerce and the professions ..." . This implied a significant growth in subject areas such as engineering, science and mathematics and computing in institutions where expansion was most appropriate. The pattern of student intakes planned for 1984-85 has been rolled forward for 1985-86 in accordance with NAB's three year planning cycle. But the NAB's next major planning exercise in 1987-88 will provide an opportunity to assess the effectiveness of the earlier exercise and to examine priorities both in relation to individual institutions and overall.

38. Thus the existing planning framework for public sector higher education does provide a means of allocating funds with a degree of selectivity on an indicative basis, but it stops short of earmarking since the local authorities themselves have discretion over the expenditure from the advanced further education (AFE) pool.

39. The WAB has adopted the same kind of approach in planning for local authority higher education in Wales. However the WAB's first planning exercise relates to the academic year 1985/86, therefore student target numbers, with a bias towards students on technological and vocational courses, will apply for the first time to the Autumn 1985 student intake in Wales.

40. As far as research is concerned, the Research Councils' approach to the funding of higher education is already highly selective: the quality of research undertaken in their own Institutes is subject to rigorous peer review; only the very best applications for grants from researchers in the university world are accepted; and the Councils additionally identify areas of funding in the light of their assessment of importance and potential application.

41. However, it is the Government's view that while some specific targeting of resources for very particular purposes as in the IT in HE Initiative and the Engineering and Technology Programme is justified, the earmarking of funds to whole disciplines would deprive institutions of the flexibility they need to decide for themselves the appropriate distribution of the resources available to them. Earmarking could lead to a rigidity within the system which would make it increasingly difficult for institutions to respond to changing priorities. The Government believes that without imposing the rigidity associated with earmarking, broadly the same effect can be achieved, and within an acceptable timescale, by giving appropriate advice to institutions.

Recommendation 14

14. "The Education and Training Board should fund postgraduate taught courses within the dual support system by the following methods:

i. a fund should be set up and administered by the Board, which should dispense grants on the basis of tenders from HEIs and in accordance with its identification of long-term priorities. (6.25)

ii. a fund should be set up to support courses which have industrial sponsors."

42. The Government agrees with the Select Committee that courses to which industry has demonstrated its support should receive priority in the allocation of central support. The Government has applied this principle in the procedures for the selection of courses for participation in the Engineering and Technology programme. Under these, only those courses regarded as having a high degree of industrial relevance were selected, and participation in the second phase of the programme is being made conditional on the institutions concerned succeeding in obtaining a significant degree of material support from industry.

Recommendations 17 and 19

17. "A system of tax credits should be established to encourage industrial investment in education and research institutions."

19. "The equipment needs of HEIs should be assisted by encouraging the donation of equipment from industry, particularly through tax credits, and through collaboration between HEIs."

43. The Government understands that the Committee has in mind two provisions of the United States Internal Revenue Code. The Research and Experimentation Credit is a 25 per cent non-refundable tax credit for the portion of a taxpayer's qualifying research expenses which is equal to the lesser of:

a. the excess of such expenses in the current year over the average amount of such expenses in the preceding 3 years; and

b. 50 per cent of qualifying research expenses in the current year.

For donations of equipment, relief is available in the form of an enhanced deduction in computing profits, equal to the production cost plus one-half of the profit which could have been made had the item been sold at market price.

44. These forms of giving relief from taxation are alien to the UK tax system and could not easily be incorporated in its structure. Moreover, the Government is generally opposed to the proliferation of special tax reliefs which benefit only limited groups of taxpayers and erode the tax base. The Government's

policy is to broaden the tax base and reduce tax rates so leaving businesses free to operate on commercial grounds without having decisions distorted by the impact of tax concessions.

45. The UK tax system already provides a number of incentives for businesses to donate money and equipment to higher education and research institutions. The basic rule on business expenditure, that only revenue expenses incurred wholly and exclusively for the purposes of the trade are deductible, is modified by Section 133, Income and Corporation Taxes Act 1970, which allows a deduction for payments to approved HEIs for technical education directly connected with the donors' class of trade. In practice the Inland Revenue regards this as covering donations both of money and equipment. In addition tax relief is available through the covenant system for donations by businesses to universities, which are charitable bodies and other institutions with charitable status. This system encourages sustained giving over a period of at least four years. Both these provisions allow 100 per cent relief on the cost to the business of making the donation. There are also special arrangements for relief for business expenditure on scientific research. Provided the research is related to the trade carried on, expenditure both on revenue account - salaries, wages etc -and on capital account - buildings and equipment - qualify for immediate relief on the whole of the cost actually incurred. This relief extends to cover sums paid to approved scientific research associations, universities or similar institutions for research related to the class of trade carried on. The Government sees no case for going further.

46. The Government believes that closer liaison between the business sector and the HEIs would be beneficial not only to the parties themselves but also to the economy as a whole. Consideration is being given to means of encouraging increased business sponsorship of higher education and greater take-up of existing tax reliefs.

Recommendations 18 and 20

18. "In providing services to industry, whether of teaching, research or consultancy, HEIs should aim to ally with, and to develop their excellence in, particular sectors of industry."

20. "HEIs should establish centres for multidisciplinary research and teaching in engineering, in collaboration with industry and assisted on a pump-priming basis by Government."

47. The Government has warmly welcomed the Select Committee's support for further moves on the part of many HEIs to ally themselves with particular industrial sectors, and to diversify their sources of income. The Government has made well known its desire to encourage HEIs to increase their earnings from private sources and thereby become less reliant on the grant from central Government. The UGC has said in a letter to the universities in 1982 that income earned from industry will not lead to any consequent reduction in recurrent grants. To encourage universities' efforts in this direction the Government has confirmed, in the Higher Education Green Paper, that increases in income from outside sources will not lead to reductions in Government funding (Cmnd 9524, paragraph 9.5). The Government has also introduced legislation to remove the technical barriers to polytechnics and other local authority colleges earning income from business and technology transfer activities and the Further Education Act 1985 received the Royal Assent on 16 July. Institutions themselves have been expanding activities in this area by establishing industrial liaison units, science parks and limited companies, with a view to promoting technology transfer and marketing their services. Some institutions have already demonstrated that earnings from industry can be significant. Overall, however, the Government believes significant scope exists for further development. The report produced by the Advisory Council for Applied Research and Development (ACARD), in collaboration with the Advisory Board for the Research Councils (ABRC), entitled 'Improving Research Links between Higher Education and Industry' (HMSO, June 1983) and to which the Select Committee refers, has been helpful in this context. So too has been the UGC's advice on alternative sources of funding contained in its strategy advice* and that from

---

* "A Strategy for Higher Education into the 1990's (HMSO, 1984).

the Committee of Vice Chancellors and Principals (CVCP) Working Party set up to consider alternative funding.

48. The Government has made clear in a number of specific ways that it wishes to see links between HEIs and industry promoted and strengthened. The Government and other bodies have taken action in areas highlighted in the ACARD/ABRC Report mentioned above, including moves towards increased selectivity in research funding (see paragraphs 27 and 36), a research policy for public sector higher education (see paragraph 27), consideration of portable pensions and the establishment of a national data base of academic expertise and facilities. The British Technology Group (BTG) has announced that it will provide on commercial terms for up to half the costs of projects in institutions designed to facilitate technology transfer.

49. However, the Government strongly believes that assistance by industry to higher education is most effective when this is part of a two-way process. The Government has therefore supported a number of collaborative initiatives which aim to create closer relationships between education and industry. Many of these initiatives are grant-aided by the Science and Engineering Research Council (SERC) whose funds come from the tax-payer. The Teaching Company Scheme, of which there are now some 160 programmes in universities and polytechnics, exemplifies the beneficial role such cooperation can secure. Many close links are also developing through the Science Park ventures and in the DES PICKUP (Professional, Industrial and Commercial Updating) Programme. Such developments are encouraging. Industry must be aware that it is very much in its own interest that a fuller partnership be developed with the higher education system. Through such a partnership industry can make known its requirements and develop jointly the research activity which will stimulate innovation. Mention has already been made (at paragraph 42 above) of the important role of industrial assistance in the Engineering and Technology programme.

THE SCHOOL CURRICULUM

Recommendation 22

22. "The curriculum should include some lessons in basic economics and the significance of technological and industrial developments. Industrial problems should be integrated into the teaching of science and technology. It is the responsibility of industry to take the initiative in increasing liaison between schools and industry, which should be fostered at local and regional levels through the network of Science and Technology Regional Organisations."

50. "Better Schools" (Cmnd 9469, March 1985) sets out the Government's view that some awareness of economic matters, notably the operation of market forces, the factors governing the creation of private and public wealth, and taxation, is a prerequisite for citizenship and employment; and that all pupils should be introduced to new technology and its significance for people's lives and work.

50A. The Government has published "Science 5-16: A Statement of Policy" (HMSO, March 1985) which sets out a policy framework for science education in the compulsory years in the schools of England and Wales. It draws attention to the need to incorporate contemporary examples of technological applications in science teaching and stresses the importance of making science education in schools relevant to adult and working lives in the world of the future.

51. The Government shares the Committee's view that it is the responsibility of employers, not least at the local level, to play their full part in partnership with local authorities and schools in improving contacts between schools and the world of work. In 1983 the Government urged those local authorities who had not already done so to allocate to an officer full-time responsibility for the promotion of school-industry links. Such initiatives should be fostered through all the available channels, including the network of Science and Technology Regional Organisations (SATROs), and in Scotland the Scottish Education Industry Committee (SEIC), set up by the Consultative Committee on the Curriculum in 1983 to act as a source of advice on curricular matters in which there is a particular industrial interest. The experience being gained through the TVEI and other Government funded programmes is of direct relevance. The Government

hopes that employers will take advantage of the opportunity presented by the advent of Industry Year 1986 to build on existing successful practice in many parts of the country; and that employers will also involve themselves more extensively in the work of school governing bodies and of examination boards.

Recommendation 23 and 24

23. "The efforts of the Equal Opportunities Commission, the Engineering Council and others to encourage girls to take up science and technology are supported. The emphasis of initiatives should be at primary school and in the early years of secondary school."

24. "All local education authorities should draw up programmes to develop the interest of girls in science and technology, making use of positive action in favour of girls."

52. The Government shares the Committee's concern that more girls should be encouraged to pursue studies in science and technology. It recognises that the science education of many girls is at present inadequate. "Science 5-16: A Statement of Policy" defines the aim that science education in every school should give genuinely equal curricular opportunities to boys and girls and should in particular actively seek ways of exciting the interest of girls in those aspects of science which some girls at present find unappealing or intimidating. It calls for action to ensure that all girls as well as all boys are able to pursue their studies of both the biological and the physical sciences up to the age of 16; and says that particular attention should be given to the expectations and attitudes of girls when reaching decisions on style and methods of teaching, on curriculum content and on timetabling arrangements.

53. A number of current initiatives are helping to foster the interest of girls in science and technology. The programme of activities organised for Women Into Science and Engineering (WISE) Year has done much to make girls more aware of the opportunities open to them; the Technical and Vocational Education Initiative and the Microelectronics Education Programme (and the Scottish Microelectronic Development Programme) have an important contribution to make; the work of the Secondary Science Curriculum Review has since its inception

given priority to the development of approaches which will meet the needs of girls as well as boys and in Scotland a jointly funded project aims to develop an awareness in pupils in the 9-14 age range of the developing concept of equal opportunities for the sexes and to assist teachers in considering their attitudes to this in relation to the teaching process and generally to the school and the classroom. The rapid development of science in primary schools, to be supported by Education Support Grants in over 50 local education authorities in England and Wales from September 1985, will also have an impact on attitudes in the longer term.

Recommendation 25 and 27

25. "The unified examination at 16-plus is welcomed. At the same time there should be a rationalisation of the plethora of different syllabuses."

27. "AS levels should be introduced as soon as possible."

54. The Committee's support for the introduction in England and Wales of the new single system of examinations at 16+, the General Certificate of Secondary Education (GCSE), and for AS levels, is welcome. One of the objectives in introducing the GCSE is to reduce the number of competing syllabuses in particular subjects. This will be achieved by having five Examining Groups, in place of twenty examination boards, offering the new examinations. In addition, all syllabuses will need to comply with national criteria, approved by the Secretaries of State for Education and Science and for Wales. This will help further to reduce unnecessary proliferation of syllabuses and subject titles, although a balance has to be drawn between simplifying and rationalising syllabus options and allowing pupils as much choice as possible so as to enable them to derive maximum benefit from subjects which they will like and in which they will do well.

55. 'Better Schools' announced the Government's decision that AS level examinations should be introduced with effect from the Summer of 1989. The first courses will begin, accordingly, in September 1987. This is a year later than was originally planned; but the postponement will give the Examining Boards more time to prepare first class syllabuses and schools and colleges more time

to arrange courses. The postponement will also separate the introduction of AS levels by one year from the introduction of the GCSE.

Recommendation 26

26. "Some instruction in mathematics, the sciences and the humanities should be compulsory for all children in the UK up to the age of 16."

56. "Better Schools" defines the elements of the school curriculum which the Government believes to be essential for all pupils if breadth and balance in the curriculum of both primary and secondary schools are to be achieved; they include mathematics, a broad science programme, and elements drawn from the humanities. "Better Schools" also calls for pupils to be introduced to a wide range of areas of experience, knowledge and skill so as to foster understanding and the development of positive personal qualities and attitudes. It is for the schools themselves, operating within the framework of national and local policies for the curriculum, to reach their own decisions on the details of the programme offered to individual pupils.

57. The Government has said that all pupils in Scotland should study English, mathematics and a science. It has also strongly recommended that the curriculum for all pupils should cover the 8 modes of study recommended by the Munn Committee, which should ensure that all pupils cover aspects of the humanities.

Recommendation 28

28. "Efforts to upgrade the teaching of craft, design and technology are supported. Where possible design elements should be integrated in the teaching of mathematics and physics."

58. The Government is anxious to foster the teaching of craft, design and technology (CDT); and much work is already taking place to this end. The Technical and Vocational Education Initiative is supporting developments in the practical and technological aspects of the curriculum in schools in the majority of LEAs. TVEI schemes aim to have a wide impact throughout the whole of the

curriculum in the participating schools and colleges and the collaboration of cross-curricular groups is leading to the spread of design elements to other relevant subjects. Training in CDT is also one of the areas that will qualify for support under the two year, £25 million TVEI - related In-Service Teacher Training Scheme which is being administered by the MSC on an interim basis for the two years 1985-6 and 1986-7 (see paragraph 80). The In-service Teacher Training Grants Scheme administered by DES and the Welsh Office will be extended in 1985-86 to include training to equip existing teachers of CDT to teach design-based technology courses (see also paragraph 8). The Government is contributing to the start up expenses for British School Technology to promote the teaching of technology in schools. The Government is also providing special support for mature entrants to CDT teaching through the CDT Teacher Training Awards Scheme. The Government will continue to give attention to the needs of the schools in this area.

59. Design elements, or indeed any other aspects of current relevance can be incorporated within the new Scottish Standard Grade courses for mathematics and physics. The new Standard Grade courses in Craft and Design and Technological Studies will incorporate significantly updated approaches to teaching in these subject areas.

Recommendation 29

29. "New schemes to develop the use of computers across the curriculum are necessary, with special attention to the retraining of teachers and introduction of educational software. Consideration should be given to merging the Micros and Schools schemes and the MEP and establishing support on a permanent footing under the DES and Scottish Education Department."

60. The Government programmes concerned with the use of microcomputers and ancillary equipment in schools were designed primarily to stimulate local education authorities and schools to explore the uses of the new technology across the curriculum. They are now doing this increasingly and the work includes the training of teachers and the introduction of software into schools. The Government is currently considering whether it should take further initiatives in this area in support of these activities. The Government accepts

that there would be merit in planning future schemes under the control of the Education Departments. There may be times, however, when it would be appropriate for other Departments to take the lead. In such circumstances there would be close cooperation between the DES and the Department concerned.

61. As the Committee noted, the Scottish Microelectronics Development Programme is already on a permanent footing as the executive arm of the national advisory body of the Microelectronics in Education Committee, which has now produced a National Plan for computers in Scottish Education.

Recommendation 30 and 59

30. "Computer centres should be established outside the classroom, either in colleges and HEIs, or in association with ITeCs, for use by school children and adults."

59. "ITeCs should be developed as local centres of training and retraining of adults in IT skills."

62. The Information Technology Centre (ITeC) Programme which currently comprises 164 fully operational centres located throughout the country is already involved in addition to its mainstream YTS work with training both school children via links with the Technical and Vocational Education Initiative, and adults through an open access policy. This latter involves the use of ITeC facilities and equipment mainly in the evenings and at weekends. A number of centres are already delivering other MSC adult training programmes, eg. Job Training Scheme and Access to Information Technology (AIT).

63. The scale and volume of training carried out by ITeCs under open access is likely to increase markedly in the next year following changes to some of the rules controlling the use of revenue earned from such activities. The overall impact is likely to be further increased when all 175 ITeCs which have been allocated become operational.

64. MSC is also equipping, in collaboration with DTI, an increasing number of the 350 YTS Training Workshops with IT/computer equipment and through a similar policy of open access it is hoped that they too will make a valuable contribution to increasing IT awareness and training.

Recommendation 31

31. "The Engineering Council should use its powers of accreditation to further multidisciplinary development in the undergraduate syllabus. Courses structured around core modules should be more extensively adopted by universities."

65. The Government agrees that the Engineering Council's powers of accreditation are a potent force to enable it to influence the content of Engineering courses, and awaits with interest its response to this recommendation.

Recommendation 32

32. "HEIs should consider setting up committees to facilitate liaison with industry and involving industrialists in some academic decisions."

66. Almost all higher education institutions have staff whose function is to encourage and promote liaison with companies. These staff service bureaux and units which may serve particular academic departments or a whole institution.

67. Industrialists are frequently represented on polytechnic governing bodies and may be appointed to academic positions. Liaison between HEIs and industry may also be effected through a limited company operating in a fully commercial profit-making environment.

68. Other links may take the form of collaboration over sandwich or other course provision, collaborative research or consultancy work undertaken for local industry. The CVCP have set up an industrial advisory committee under the chairmanship of Lord Flowers to examine ways of developing links between universities and industry. Topics to be considered include the interchange of staff between universities and industry including joint appointments, secondments and consultancies.

TEACHERS

Recommendation 33

33. "To improve the supply and quality of teachers and lecturers, differential payments should be introduced for teachers in shortage subjects, particularly mathematics and the natural sciences, using the discretionary allocation of points on the Burnham scale and power to pay differential salaries should be introduced for lecturers in important technological subjects. In HEIs consideration should be given to allowing teachers involved in industrially-related courses or research to earn an additional salary direct from course or research grant income."

69. The Government shares the Committee's concern to see an improvement in the supply and quality of teachers in shortage subjects, particularly mathematics, physics and craft, design and technology; and accepts the tenor of advice on this problem recently submitted by the Advisory Committee for the Supply and Education of Teachers namely that the salaries, conditions of service and the perceived status of teachers need to be sufficiently attractive when compared with those applying to graduates in the key disciplines employed in other sectors. The Government has stated that it looks towards an agreement on teachers' pay which would require employers to promote more teachers than under the existing system to the higher salary scales, exercising their discretion in doing so in the light of the quality of teachers' work and the demand for their skills and qualifications elsewhere. Such an agreement would significantly increase the discretion available to employers to pay higher salaries to teachers in shortage subjects. The Government will also be taking other complementary action to encourage suitable applications for planned teacher training courses in the subjects concerned.

70. The Higher Education Green Paper recognises that the pay arrangements there, too, should perhaps reflect to a greater extent than they do at present the differential supply of and demand for academic expertise. In the universities these matters are for discussion between the CVCP and the AUT. In the maintained sector, the Burnham Further Education Committee agreed last year

on the need for a fundamental review of the current pay structure and related conditions of service applying in local authority further education.

71. In higher education it is already possible for teachers to supplement their academic salaries and this at present occurs to a greater or lesser extent, depending in part on the industrial relevance of the area in which teachers work.

Recommendation 34

34. "All secondary school teachers in the UK should be graduates or equivalent in the subject they teach."

72. The Committee will, of course, be aware that in Scotland it has for a number of years been the case that secondary school teachers should be graduates or equivalent in the subject they teach.

73. In England and Wales entrants to the teaching profession are now normally graduates, though it will inevitably be many years before this change extends to the teaching force as a whole. The majority of intending secondary teachers are trained through a one-year Postgraduate Certificate in Education (PGCE) course, following completion of a first degree course. Initial teacher training institutions are required to satisfy themselves that entrants to such courses hold degrees which are appropriately related to the work of schools. In certain subjects, mainly those in which there is not a ready supply of graduates with suitable and relevant degrees as a basis for PGCE training, undergraduate courses are available leading to either the Bachelor of Education (BEd) degree or a BA or BSc degree with a concurrent certificate in education. The exceptions to these two routes are a small number of one-year non-graduate Certificate in Education courses in CDT. These are the last remaining courses which entitle non-graduates to qualified teacher status. They are justified by current shortages of CDT teachers: the need for them is to be kept under review.

74. Those who successfully complete courses of initial teacher training in England and Wales are formally recognised by the Secretary of State as having

acquired qualified teacher status. The recognition letters specifically draw attention, in the case of secondary trained teachers, to the subjects for which the course was intended. This information helps employers and schools in recruitment and deployment decisions, facilitating an improved match between teachers' qualifications and the teaching programme assigned to them in schools, though teachers are not formally limited to teaching the subjects (or the age range) for which their initial training was intended.

Recommendation 35

35. "All initial teacher training should include some structured introduction to industry and the economic importance of wealth creation. Lecturers in further and higher education should be encouraged to broaden their experience of and contact with industry."

75. The criteria for the approval of courses of initial teacher training issued in April 1984 require that students should have an understanding of the relationship between the adult world and what is taught in schools, and in particular of the ways in which pupils can be helped to understand the values of a free society and its economic and other foundations. Institutions adopt a variety of approaches: some include a special taught component within the course, some attempt to enhance economic and industrial awareness across the curriculum, and others place students with firms for periods ranging from a few days to several months.

76. The Department of Education and Science, jointly with the Department of Trade and Industry's Industry/Education Unit, is funding a three year project concerned with the development of curriculum programmes to help student teachers intending to teach in secondary schools to relate their teaching to an understanding of the place of industry and commerce within society; while in Scotland consideration is being given to a teaching qualification for technological studies.

77. The Government fully supports the view that lecturers in further and higher education should be encouraged to broaden their experience of and contact with industry. The secondment of lecturers in maintained institutions to industry, commerce and the public service has been encouraged by arrangements whereby a large part of their salary costs may be met from the in-service training pool, through which some of the costs of in-service training are shared amongst local authorities. The DES will be making available in 1985/86 specific grant amounting to £1.26m through the In-Service Teacher Training Grants Scheme for the technical updating of FE lecturers and also to provide appropriate FE lecturers with PICKUP_related skills. Secondments to industry and commerce will be eligible for grant. Technical updating for further education lecturers is also likely to be given some priority under the new funding arrangements for non-advanced further education announced in the Government's White Paper "Training for Jobs" (Cmnd 9135, January 1984).

Recommendation 36

36. "Initial training for all primary school teachers should include an element of mathematics and basic science."

78. The criteria for the approval of initial teacher training courses in England and Wales require that training courses for intending primary teachers should not only give attention to the methodology appropriate to the particular subject or area of the curriculum in which the student expects to make a special contribution but should also devote a minimum of 100 hours to the study of the teaching of mathematics and the understanding of its significance across the curriculum. A similar requirement applies to the study of the teaching of language. The criteria also require that all relevant areas of the curriculum should be included in the student's study and teaching practice, in order to prepare intending primary teachers for their wider role of class teaching. Thus all intending primary teachers in England and Wales will be expected in future to devote at least 100 hours to the study of teaching mathematics and some time too to teaching science. In addition, a proportion of new primary teachers will have been trained with special emphasis on mathematics and basic science, so that they may provide leadership in the teaching of those subjects in primary schools. In Scotland, the new 4 year BEd course, which commenced in October 1984, requires instruction in mathematics and science, as proposed by the Sub-Committee.

Recommendation 37

37. "The DES and local education authorities should take all steps possible to raise the level of in-service training of teachers."

79. The available evidence suggests that the amount of in-service training for school teachers has increased significantly in recent years. "Better Schools" sets out the Government's view that extensive in-service training will be needed to equip teachers to respond to the increasing demands made on them; that resources available for in-service training are not always being used to the best advantage; that a radical change is required in the funding and organisation of in-service training; and that the most effective way of achieving this would be through the introduction of a new specific grant to support local authority expenditure on most aspects of in-service training.

80. Legislation is required in order to extend the Secretary of State's existing powers to grant-aid in-service training and the earliest that a new system of funding could be introduced is April 1987. As an interim measure, the Government has invited the Manpower Services Commission to administer an in-service teacher training scheme to promote developments across the curriculum of the kind related particularly to the Technical and Vocational Education Initiative. Under this new scheme it is for local education authorities to assess the training needs of their teachers in the relevant curricular areas, and to make proposals for additional training required. The MSC administered scheme will provide an additional £25m for in-service training over two financial years.

81. In addition, the In-service Teacher Training Grants Scheme, administered by the Department of Education and Science and the Welsh Office, which provides financial assistance to local education authorities towards the cost of releasing teachers to undertake in-service training in designated national priority areas, is being extended in 1985-86 to a number of new areas. These include the training of school teachers in teaching craft, design and technology and, for further education teachers, professional, industrial and commercial updating as a preparation for adult vocational education and training.

82. In Scotland a specific grants scheme has been introduced although on a fairly modest scale (about £250,000 per annum), and MSC funds will be available in 1985-86 and 1986-87 under the Scheme described in paragraph 80 above. In the longer term the Scottish Education Department (SED) will be reviewing policies and the existing machinery so that in-service training may make a fuller contribution.

Recommendation 38

38. "Industrial companies should increase their efforts to interest local teachers and headteachers in the company's business. They should consider putting on summer schools for teachers, and paying them their expenses."

83. The Government agrees that industrial and commercial concerns have an important role to play in promoting and fostering links with local schools and takes the view that much would be gained if a wider range of such concerns were to offer facilities to enable teachers to learn more about the world of work at first hand.

84. A number of approaches to such teacher secondment have borne fruit in recent years. "Summer Schools" and other courses mounted by, or in co-operation with, industrial and commercial concerns can make an important contribution. The financial arrangement made for such provision is a matter for the firm or firms concerned and the employing local education authority.

85. Experience suggests that the greatest benefit is obtained where industrial and commercial involvement is not limited to the provision of particular training opportunities or experiences - excellent though these might be - but extended to close liaison with schools all the year round. The effectiveness of training for teachers, including that provided by schemes of secondment, depends in particular on a close match between the training needs of the individual teacher and the training experience provided. This further underlines the need for close co-operation between schools, local education authorities and industrial and commercial concerns in the planning of training provision.

86. Close and continuing liaison requires a commitment both from schools and from industry and commerce. For their part, schools are increasingly involving industry and commerce in the planning of courses for pupils - particularly in the area of technology - and there is considerable scope for expansion of work in this area. It is intended that Industry Year 1986 should include a programme to encourage every secondary school and many primary schools to strengthen existing links and to build new links with local industrial and commercial concerns.

INDUSTRIAL TRAINING

Recommendation 6

6. "Industry should accept more responsibility for the education and training of its recruits".

Recommendation 39

39. "Low levels of initial training and especially the inadequacy of continuing training are causes of concern and must be corrected. Correction of skill shortages lies mainly in industry's own hands."

87. The Government recognises that the public educational and training systems have a vital role in meeting the economy's manpower needs and strenuous steps have already been taken by the Government to increase provision in disciplines relevant to the needs of the IT industries.

88. However, the Government agrees wholeheartedly with the Sub-Committeee that industry should accept more responsibility both for training its recruits and for retraining and updating its existing workforce. Regarding adult training, the Government believes that the prime responsibility for funding must rest with employers themselves. They are best placed to determine what their skill needs are and how those needs should be met; and they are the ones who should benefit most from improved employee competence and efficiency. However, employers in countries such as Germany, the USA and Japan bear a far greater responsibility for the funding of vocational education and training than in Britain.

89. This approach is now also reflected in training for young people. From April 1986 the Youth Training Scheme will be expanded to provide two years' training for 16 year old school leavers and one year for 17 year olds. Although the Government is prepared to contribute a substantial amount of extra money towards the cost of the expansion, it is looking to employers to pay their fair share as well, since they will benefit from the new scheme.

Recommendation 40

40. "A national training levy should be introduced across all sectors of industry and commerce. The rate of the levy should be high enough to be effective, and should be remissible to those companies which engage in, or pay for training. Firms employing less than ten people should be exempt. All in-house and some out-of-house training should count as a credit against the levy; if practicable, training for new technologies should qualify for a weighted credit."

90. The introduction of a national training levy would move against the thrust of Government policy in a number of ways. First, it would mean a more interventionist approach, whereas the Government has encouraged voluntary provision, most notably in replacing 16 out of 23 Industrial Training Boards (ITBs) with voluntary arrangements. Second, this would mean more bureaucracy and less influence for employers over the training available - key considerations in the Government's decision to abolish those ITBs. Third, it would create additional financial burdens for firms, which might lead to a reluctance to employ staff. The Government's policy is spelt out in last year's White Paper 'Training for Jobs' (Cmnd 9135) which emphasises the responsibilities of employers for training and explains that the primary funding of training must also be the responsibility primarily of employers acting individually or collectively, who know what is needed and can ensure it is delivered cost-effectively.

Recommendation 41

41. "Work experience and sandwich courses are important. The CBI should investigate the availability of industrial placements for students on vocational courses, especially undergraduate courses in engineering and technology, and take steps to ensure that the number of placements increases."

91. The Government recognises the value which sandwich courses, integrating periods of study and supervised work experience, can provide. It has recently published a report on a programme of research into sandwich education, the RISE programme entitled "An Assessment of the Costs and Benefits of Sandwich Education".

92. For sandwich education to realise its full potential, it is crucial that sufficient numbers of placements suitable to the training needs of students are provided. This is largely a matter for industry. The Government therefore for its part welcomes this recommendation and hopes that the CBI will feel able to respond positively to it.

Recommendation 42

42. "In collaboration with both sides of industry and the Education and Training Board the Government should establish a national training policy. As the national training authority, the MSC should implement the policy, employing the existing bodies in the training field as its managing agents."

93. There are many bodies and institutions involved in different ways in the provision of training, including industrial training organisations, local authority colleges, commercial training organisations, employers, and Government departments and agencies. In recognition of the need for a coherent approach in this important area, the Government's 1981 White Paper "A New Training Initiative: A Programme for Action" (Cmnd 8455) identified three national objectives:

- better preparation in schools and colleges for working life and better arrangements for the transition from full-time education to work;

- modernisation of training in occupational skills;

- wider opportunities for adults to acquire and improve their skills.

These established the framework for the future development of training in this country and form the basis of a national training policy.

94. The 1984 White Paper "Training for Jobs" (Cmnd 9135) considered the progress made towards these objectives and assessed what more needs to be done. For adult training, in particular, there is a need to secure and sustain the quantity and quality of skills necessary to meet changing needs and circumstances, and to enable individuals to undertake training, retraining and continuing education which give them confidence, motivation and sense of responsibility as well as skills, knowledge and experience.

Recommendation 43

43. "The MSC should, on the advice of the Education and Training Board, implement programmes of special priority in training and retraining at technician and craft levels."

95. Training and retraining at technician and supervisory levels is already receiving special priority through MSC's Open Tech Programme and other MSC programmes. The former, established in 1982 for an initial period of 5 years with a budget of £45m, aims to extend the use of open learning so as to enable people for whom conventional training is unavailable or unsuitable to prepare for and adapt to technological and other changes in their work. Some 140 projects are being funded on a pump-priming basis to produce and deliver open learning materials and systems. The programme is demonstrating the flexibility and cost effectiveness of open learning, which enables employees to train without the need to attend courses away from their workplaces.

Recommendation 44

44. "Late developers at school should be given greater encouragement to enter industry as technicians and craftsmen. BTEC should take steps to publicise such possibilities among schoolchildren."

96. The Government agrees that all late developers should be given encouragement, and the opportunity to fulfil their potential. Greater effort is required generally to encourage young people to enter industry and/or training as technicians and craftsmen, and the Government is appreciative of the efforts to this end of the Business and Technician Education Council (BTEC) and of the City and Guilds of London Institute (CGLI) in particular.

Recommendation 45

45. "Industry should be encouraged to identify its own skill requirements through the adoption of technical audits. Voluntary audits should be more widely adopted as standard company practice."

97. The Government believes that it is important for companies to identify their current resources and future requirements for skilled manpower. It therefore strongly supports the Committee's recommendation that companies should conduct audits of their technological manpower, as has previously been advocated by the Engineering Council. The Government believes that it would be inappropriate for such audits to be compulsory and endorses the Committee's recommendation that voluntary audits should be more widely adopted as standard company practice.

Recommendation 46

46. "Disclosure of expenditure on training should be included as a discrete element in company accounts."

98. While the Government recognises the importance of industry investing in training to meet its needs for skilled manpower it believes that it would be inappropriate to require expenditure on training to be separately identified in company accounts. The Government is anxious to reduce the administrative and legislative burdens on companies; in line with this policy, their aim has been to keep statutory accounting disclosure requirements to a minimum and give companies as much flexibility as possible to present information in a way best suited to their circumstances. However, companies may provide, on a voluntary basis, information on their expenditure on training, and the Government would encourage them to do so.

Recommendation 47

47. "In its support schemes for technological improvement the DTI should make specific provision for the identification of the need for training and updating. In areas of skill shortage, grants for capital equipment should be conditional on the inclusion of the company's relevant training proposals in its application."

99. The Government agrees that firms receiving support for technological improvement should be able to demonstrate that they have the necessary skills both technical and managerial to complete the project successfully. This is therefore one of the conditions which the DTI requires to be satisfied in the administration of its technological support schemes, and in appropriate cases the provision of financial support may be made conditional on the company taking action to remedy deficiencies which appear to exist in the availability of the necessary skills.

Recommendation 48

48. "The Ministry of Defence and other large Government purchasing Departments should devote more effort to monitoring training standards and technological skills among contractors. Consideration should be given to making the award of government contracts subject to stiffer conditions concerning such standards."

100. The Ministry of Defence (MOD) has already considered the question of making the award of defence contracts subject to stiffer training standards, but remains of the view that continuation of monitoring of the training standards and technological skills among its contractors is the most effective contribution to its policy of obtaining best long term value for money in defence procurement.

101. There are numerous avenues through which firms can improve competitiveness, and the Government would not wish to impinge unnecessarily on firms' commercial judgements about which are most appropriate to their particular circumstances. MOD's procurement procedures already include various assessments of our contractors' technical and managerial competence. Such competence is indirectly a measure of the training and education (and other qualities) of the contractors' staff, as is the ability to win contracts in the increasingly competitive environment of defence procurement. In these circumstances, the Government considers it unnecessary to make good education and training a condition of the award of defence contracts, separately from the criteria of technical and managerial competence to which such training is a contributing factor.

Recommendation 49

49. "Management education should include greater emphasis on technological skills and awareness. This should be encouraged not only by the Engineering Council but by the DTI and other relevant bodies."

102. The content and balance of management education is primarily a matter for the education institutions and the validating bodies. But the Government shares the Committee's view that management education should include greater emphasis on technological skills and awareness. It will therefore be glad to see influence to this effect brought to bear and would itself encourage development in this direction.

CONTINUING EDUCATION AND TRAINING

Recommendation 51

51. "There should be a large-scale increase in provision of continuing education and in employers' updating and retraining programme, which have an importance approaching that of intitial education. Individuals will have to recognise the importance of self-improvement in retraining."

Recommendation 53

53. "Employers should invest more in retraining and updating. Provision should mix on-the-job training in-house with instruction externally to the company."

103. The Government is in full agreement with the Committee's conclusions. That this country lags behind its competitors in investment by employers in the updating and retraining of their workforces is well documented, most recently by the report commissioned by NEDC and MSC, "Competence and Competition" (NEDO 1984). Individuals and the professional institutions which often represent them also need to be more aware that initial education and training can no longer be -even if ever it was - an adequate basis for continuing professional competence. The main responsibilities for ensuring that updating is adequate in quantity and quality and appropriate in emphasis and scope must lie with employers, the professions and the professionally qualified individual.

Recommendation 57

57. "The Government should relax their insistence that all courses in continuing education should be self-financing, and should support some courses with additional funding on the advice of the Education and Training Board. Short courses aimed at technologists are particularly important."

Recommendation 58

58. "The Committee propose two methods of funding post-experience courses:

a. Support could be geared to industrial sponsorship of new courses, where industry contributes at least 50 per cent of the cost of development and student support. The Education and Training Board should have responsibility for assessing the level of government funding.

b. A fund could be set up to help medium and small-size businesses in particular which give paid leave for upgrading and updating courses."

104. Employers are in the best position to know what training they require and the means of delivery which most closely meet their situation. The professions are similarly placed in regard to their professional membership. In particular, the Government believes that professional insititutions in general and those concerned with new technologies in particular, should consider whether life-long professional registration should as hitherto be dependent only on initial education and training, rather than subject to regular and appropriate continuing professional updating.

105. The Government does not consider it appropriate to offer a substantial subsidy of vocational updating and training. Its role is rather to reinforce the workings of the training market by ensuring that adequate information systems about training needs and training courses are available and by facilitating the response of the educational system in helping to provide for those needs. In addition, the MSC provides local training grants to help employers to ensure that the skills of their employees are updated and broadened. One of the aims of this scheme is to help firms - especially small firms - to introduce changes in technology and business methods necessary to their survival and growth.

Recommendation 54

54. "The short-term needs of industry can only be met by increasing further the amount of retraining and conversion courses. In particular there should be more courses designed to meet the needs of women re-entering employment. The Education and Training Board should advise on and monitor the quality and relevance of conversion courses."

Recommendation 52

52. "Advice on the availability of post-experience courses should be part of the responsibility of the Education and Training Board."

106. The Government's programme for professional, industrial and commercial updating (PICKUP) started in 1982, has been directed specifically to these ends. In 1985-86, expenditure of over £5m will be used to encourage the provision of retraining and updating courses by universities, polytechnics and colleges. Innovation in developing new forms of updating, attuned to meeting more effectively the requirements of employers, the professionals and individuals, who are being funded, as is the updating of academics in the new technologies and in the skills required to respond effectively to market forces. Special emphasis is being given to promoting effective and lasting collaboration at local level between employers and the providers in response to updating and retraining needs. A major development funded through the PICKUP programme is a computer-based directory of short updating courses which is to have the Prestel viewdata system as a means of dissemination.

107. In addition, the Government is addressing a number of specific problems within its general role. It makes funds available through the MSC for training programmes aimed at improving the position of women in the labour market. They include expanding opportunities for women to enter occupations in which they have traditionally been under-represented and provide facilities to enable women to return to work after a long absence. The Government is also considering a scheme for training loans aimed at encouraging individuals to invest in their [illegible]re and to take an initiative in following courses which they judge will [illegible]eneficial for their careers. More general in its scope is the Adult

Training Campaign launched by the Government in November 1984. This has brought together the national organisations closely involved in adult training - the MSC, DE, DES, SED, WOED, DTI, COI, CBI and the TUC.

OPEN AND DISTANCE LEARNING

Recommendations, 55, 50, 56 and 60

55. "There is great potential in techniques of distance learning: activity in this field should be expanded."

50. "The extension of the use of distance learning for managers should be encouraged. The Government should support the development costs of such courses which include a module on technological development."

56. "The use of tutored video instruction should be widely adopted, notably in disseminating the teaching of centres of excellence through videoed lectures. Local colleges of further education, polytechnics and universities should provide tutors in association with the centres of excellence. There should be an expansion in the networking of computer-based training, at work and in the home. The Open University and Open Tech should take the lead in promoting such techniques."

60. "A grant element should be introduced to the funding of updating courses put on by the Open University."

108. The success of distance learning has been clearly demonstrated, first by the Open University since its inception in 1969, and more recently by the Open Tech. The support of successive Governments has been instrumental in developing and expanding distance learning, particularly as a means of responding to the training and updating needs of employers and the professions. The Open University at degree and post-experience levels and the Open Tech at craft and technician levels are making an increasingly important contribution to continuing education and updating training for the new technologies.

109. Distance learning is particularly advantageous in reaching widely dispersed populations. But, because students have to be more nearly self-sustaining than under conventional teaching methods, distance learning teaching materials need to be of the highest quality and fully developed. For distance learning to be economic, the size of the client groups has to be sufficient to justify the high initial outlay on course development. Distance learning is particularly effective in disseminating new knowledge and in using to best advantage scarce expertise. As such, it is especially relevant to updating engineers, managers and teachers in new technology subjects. It has exceptional advantage for employers, for it enables their workforces to be updated or retrained whilst still available for work.

110. The Government has supported and will continue to support the development of distance learning for applications to which its characteristics are well suited. As the Committee points out, distance learning is well suited to the requirements of management training. An outstanding example is the series of courses for managers - "The Open Business School" - which the Open University has produced in collaboration with the British Institute of Management. Although it remains the policy of the Government, as it has been of its predecessors, that the principal responsibility for training and retraining adults in employment lies with their employers, the Government has made substantial funds available both to the OU and to Open Tech specifically to enable distance learning courses for industry and commerce to be developed. In the case of the Open University, £300,000 was provided in 1984-85 to fund developments in updating. In addition, the Government has undertaken to consider converting to grant the loan of £2.5m made to the Open University by the Department of Education and Science for initial investment in the PICKUP programme and the University has been asked to submit detailed proposals of the effect such a move would have on the programme.

111. The Government believes that the technique developed in the United States of tutored video instruction (TVI) could prove a useful addition to the media available for training purposes. It welcomes the initiatives of Aston University in establishing a purpose-built facility for TVI, of the Open University in collaboration with the BBC, in developing TVI in connection with contract training, and of Heriot-Watt University in making available in this

country video courses prepared in the United States and elsewhere. The Committee's suggestion for the expansion of computer-based training is also welcome. Much, however, remains to be done in evaluating the effectiveness of TVI, CBT and other new systems, such as interactive video, and in using them to best advantage.

CREDIT TRANSFER

Recommendations, 62, 63 and 61

62. "The Education Counselling and Credit Transfer Information Service (ECCTIS) and the PICKUP-sponsored directory of vocational short courses are welcomed providing that they are sufficiently funded and publicised."

63. "Credit transfers for long courses should be encouraged by the clear stipulation of entrance requirements for new courses and by publicising them through ECCTIS and this should be extended to existing courses as well. Credits should be given for attendance on short courses."

61. " The Open University should broadcast material from courses put on by other HEIs; modules from separate HEIs could be combined to form courses leading to an OU degree."

112. The Government is fully committed to achieving ease of access to and between courses. Facilitating access is a key feature of the New Training Initiatives Objectives 1 and 3. Credit transfer is particularly important in this regard. The Government aims to encourage credit transfer as a means of encouraging individuals to undertake continuing education and to realise their full educational potential. It is important that encouragement be given to those who are seeking a change of direction, either in their initial experience of post-school education or in later life. It is also important that full allowance be granted for individuals' prior learning, including experiential learning; and that the educational system should recognise that qualifications can legitimately be obtained through the cumulation of study carried out over an

extended period of time. The Government's funding of ECCTIS demonstrates the importance which it attaches to promoting these concepts. At present ECCTIS is still under development. The pilot project has as its objectives to establish the requirements for a nation-wide system, to develop the means of meeting them and to report on the potential value of the system to users. Ministers will decide the long-term future of the service, including any further developmental funding, in the light of the findings of the pilot study. Similar considerations apply to the developmental funding provided for the computer-based directory of short courses under the PICKUP programme. The Government accepts the importance of publicising these important developments and of ensuring that they are widely acceptable. That is why both services, though still under development, are being disseminated via the Prestel viewdata service, as well as on microfiche.

113. Complementary to credit transfer is the development of modular courses. The Government has encouraged the CNAA to consider the development of modular courses leading to a higher degree to be offered by a variety of public sector institutions. This initiative is likely also to involve the Open University and possibly other universities. Substantial progress is being made. The Government is also engaged in discussions with the National Health Service Training Authority with a view to developing modular courses which may lead to enhancement of initial qualifications of the professions supplementary to medicine through credit transfer and the granting of advanced standing.

114. The Open University has extensive credit transfer arrangements with other institutions of higher education, as well as making substantial use of experts from higher education and industry in developing its own distance learning materials.